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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--|-------------|----------------------|-----------------------------|------------------------|
| 10/516,078   | 06/30/2005  | Hermann Bodinger     | 4001-1190                   | 8279                   |
| 466 7590 02/23/2009<br>YOUNG & THOMPSON<br>209 Madison Street<br>Suite 500<br>ALEXANDRIA, VA 22314 |             |                      | EXAMINER<br>KOSLOW, CAROL M |                        |
|  |             |                      | ART UNIT<br>1793            | PAPER NUMBER           |
|  |             |                      | MAIL DATE<br>02/23/2009     | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/516,078

**Applicant(s)**

BODINGER ET AL.

**Examiner**

C. Melissa Koslow

**Art Unit**

1793

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-6 and 10-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6 and 10-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

This action is in response to applicants' amendment of 3 December 2008. Upon reconsideration of the amendments and arguments, the indicated allowability of claims 13-6, 10, 11 and 14-20 is withdrawn and the rejection with respect to the definition of "z" is being reinstated. The rejections over canceled claims 23 and 24 are withdrawn. Applicant's arguments have been fully considered but they are not persuasive for the reasons discussed below.

The disclosure is objected to because of the following informalities:

The upper limit of  $x$  and  $y$  are not given and cannot be determined for the information disclosed in the specification. Page 8, lines 12-13 teach in one embodiment,  $x+y+z=1$ , which indicates that applicant intends for the inventive composition to include compositions where  $x+y+z$  is not equal to 1. In addition, the specification teaches the composition can be non-stoichiometric, which means  $x+y+z$  need not equal to 1. Therefore it is unclear what  $x$  and  $y$  ranges applicant considers as his invention. The definition of  $a$  is given in the specification, While it is known that  $a$  cannot equal 1, it is not clear as to what a range applicants actual consider as their invention. Appropriate correction is required.

Applicant's arguments are not convincing since the values of  $x$  and  $y$  are not set forth in the claims as argued. Applicants argue that there relationship between  $x$ ,  $y$  and  $z$  is meant to satisfy a set of conditions pertaining to stoichiometry, morphology and phase structure, but applicants have not pointed out where in the originally filed disclosure these argued conditions appear. The objection is maintained.

Claim 21 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form.

Claim 21 does not further limit claim 1 since all PZT piezoelectric composition inherently have a morphotropic tetragonal rhombohedral phase boundary determined by the ratio of Zr and Ti.

Applicants have requested evidence that the PZT piezoelectric composition inherently have a morphotropic tetragonal rhombohedral phase boundary determined by the ratio of Zr and Ti. The supplied articles provide this evidence. The objection is maintained.

Claims 1, 12 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 12 and 13 teaches the metallization is selected from silver, copper, an alloy or silver/copper and alloys of silver/palladium; copper/palladium and silver/copper/palladium, where the amount of palladium in these alloys is greater than 0 up to 30%. Page 11 teaches the metallization can be silver, copper, an alloy, silver/copper or an alloy of silver and palladium, where the content of palladium is greater than 0 up to 30%. This does not support the claimed composition of alloys of copper/palladium and silver/ copper/palladium, where the amount of palladium in these alloys is greater than 0 up to 30%.

The added limitation to claim 1 that "a" is greater than zero is new matter since there is no teaching in the originally filed disclosure as to definition of a and thus there is nothing in the

originally filed disclosure to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of this claimed range.

The addition that the ceramic is a PZT piezoelectric ceramic does not overcome these rejections. The arguments that  $a$  must be greater than 0 and that page 11, lines 7-11 supports the subject matter of claims 12 and 13 are not convincing for the reasons given in the previous action. Furthermore the cited articles also show that if the value of  $a$  is 0, which means the amount of lead is the stoichiometric amount of 1, PZT based ceramics are piezoelectric. The rejection is maintained.

Claims 1, 3-6 and 10-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite since the variables  $a$ ,  $x$ ,  $y$  and  $z$  are not defined. Therefore the composition is not particularly pointed out and distinctly claimed. The teaching in claim 1 that  $z$  is greater than  $b/2$  or greater than  $b$ , does not define the maximum value of  $z$ . Claims 4-6 and 10-21 also do not give a definition for these variables and thus, since they depend from claim 1, they are also indefinite. While claim 3 does implicitly define  $z$  as being  $0.1 < z < 6$ , when  $b=0.2$  and  $W_{TR}=2$ ;  $1.5 < z < 6$ , when  $b=3$  and  $W_{TR}=2$ ;  $0.2 < z < 6$ , when  $b=0.2$  and  $W_{TR}=3$ ;  $3 < z < 6$ , when  $b=3$  and  $W_{TR}=3$ ; it does not define  $x$  and  $y$  and thus, since it depends from claim 1, it is also indefinite.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/  
February 23, 2009

/C. Melissa Koslow/  
Primary Examiner  
Art Unit 1793